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REMARKS

Reconsideration of the application is respectfully requested for the following reasons:

1. Rejection Under §101/Impropriety of Making Previous Office Action FINAL

This rejection has been addressed by amending claims 1 and 14 to recite that the pixel matching enables finding a location and shape of an object in space so that the object is hardly affected by a camera (*i.e.*, image acquisition means) installed imprecisely in location and direction, or a distortion of the camera lens. The claims now recite data obtained from the real world (image acquisition means, which are disclosed as cameras, as well as "scan lines," which involve the real world data acquisition technique of scanning) and the tangible application of locating an object in space despite imprecision in placement of the cameras or lens distortion. As a result, withdrawal of the rejection under 35 USC §101 is respectfully requested.

The added recitations are supported by the "field of the invention" on page 1, which discusses object location despite camera image capture imprecision, as well as by the background of the invention on pages 1-4, which includes a detailed discussion of the problems with stereoscopic image capture using left and right cameras, and therefore do not constitute "new matter."

It is noted that this rejection was clearly **NOT NECESSITATED BY AMENDMENT** since the amendments did not convert the claims from statutory to non-statutory subject matter, and since the claims were not initially rejected under 35 USC §101. Therefore, withdrawal of the finality of the previous Official Action is respectfully requested. It is noted that the only amendments made in this response are for the purpose of overcoming the new rejection under 35 USC §101.

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2. Rejection of Claims 1, 2, and 14 Under 35 USC §103(a) in view of U.S. Patent Publication No. 2002/0012459 (Oh)

This rejection is respectfully traversed on the grounds that the Oh publication discloses matching of each pixel in one scan line with another pixel in a single scan line rather than multiple scan lines, as claimed.

As explained in paragraphs [0047] to [0049] of the Oh publication, the image matching means of Oh searches a corresponding pixel or window centered a pixel $L(x+d,y)$ in a scanned image, with respect to a reference pixel or window centered at a pixel $L(x,y)$ in reference image by using Window Matching Count (WMC) values. This search does not involve multiple scan lines. Furthermore, contrary to the allegation in the Official Action, there is no suggestion in paragraph [0084] of the Oh publication, or Figs. 9A and 9B, of matching pixels in one scan line with pixels in *multiple* scan lines, as claimed.

The purpose of matching pixels using a systolic array, as claimed, between one scan line and multiple scan lines, is to ensure that when the image matching means fails to locate a corresponding pixel $L(x,y)$ in a scan line y , it will continue to search several scan lines given by $y+a$, wherein a ranges from $-n/2$ to $n/2$ (to obtain $L(x+d,y+a)$, $a \in [-n/2, n/2]$). The image matching means disclosed in the Oh publication has no such capability. It merely searches line y , rather than line $y+a$, $a \in [-n/2, n/2]$. Therefore, if the left and right cameras are not placed properly or are subject to distortion, and the searched scan line given by y does not contain a match, then Oh cannot find a matching pixel.

For example, as can be seen in the illustration, the right digital image might be rotated with respect to the left digital image. Points denoted by \bullet , \blacktriangle , \times , and \blacksquare are corresponding pixels in the left and right images, but are in different scan lines. The

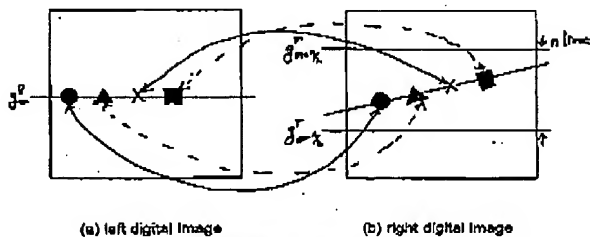


Fig. 1. Exemplary left and right images

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method of Oh cannot handle this situation, whereas the claimed invention can because it searches multiple scan lines rather than just a single scan line as in the Oh publication. Withdrawal of the rejection of claims 1, 2, and 14 under 35 USC §102(b) is accordingly requested.

3. Rejection of Claims 3-5 and 7-9 Under 35 USC §103(a) in view of U.S. Patent Publication Nos. 2002/0012459 (Oh) and 2002/0025075 (Jeong)

This rejection is respectfully traversed on the grounds that the Jeong publication, like the Oh publication, fails to disclose or suggest matching of each pixel in one scan line with another pixel in **multiple scan lines**, as claimed. The Jeong publication merely discloses left and right image conversion and not the claimed exchange of information between two adjacent processing elements, much less the claimed matching between single and multiple scan lines. Therefore, the Jeong publication could not have made up for the deficiencies of the Oh publication, and withdrawal of the rejection of claims 3-5 and 7-9 under 35 USC §103(a) is respectfully requested.

4. Rejection of Claims 15 Under 35 USC §103(a) in view of U.S. Patent Publication No. 2002/0012459 (Oh) and U.S. Patent No. 5,867,591 (Onda)

This rejection is respectfully traversed on the grounds that the Onda publication, like the Oh publication, fails to disclose or suggest matching of each pixel in one scan line with another pixel in **multiple scan lines using a systolic array**, as claimed. As mentioned in the previous response, the Onda patent is totally silent on use of a systolic array having processing elements which can exchange information with two adjacent processing elements. Further, the image matching means of Onda only determines a similarity evaluation value between a left window and a right window, and does not search of a pixel in the right window to correspond to each pixel in the left window, as in the claimed invention. Consequently, the Onda patent does not make up for the deficiencies of the Oh publication, and withdrawal of the rejection of claim 15 under 35 USC §103(a) is respectfully requested.

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CONCLUSION

Applicants believe that this is a full and complete response to the Office Action. For the reasons discussed above, applicants now respectfully submit that all of the pending claims are in complete condition for allowance. Accordingly, it is respectfully requested that the Examiner's rejections be withdrawn; and that the pending claims be allowed in their present form. If the Examiner feels that any issues that remain require discussions, he is kindly invited to contact applicants' undersigned attorney to resolve the issues.

Should the Examiner require or consider it advisable that the specification, claims an/or drawings be further amended or corrected in formal respects, in order to place the case in condition for final allowance, then it is respectfully requested that such amendment or correction be carried out by Examiner's Amendment and the case be passed to issue.

Alternatively, should the Examiner feel that a personal discussion might be helpful in advancing this case to allowance, the Examiner is invited to telephone the undersigned at any time.

Respectfully submitted,

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NOT A Final Action/Response: PVSUS/10/761193-02 -pd